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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kohei Yamanaka

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7590

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EXAMINER

GARCIA, ERNESTO

ART UNIT

PAPER NUMBER

3679

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/684,684	YAMANAKA ET AL.	
	Examiner	Art Unit	
	Ernesto Garcia	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2006 and 11 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-22 is/are pending in the application.
- 4a) Of the above claim(s) 12-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-11,21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/13/2005 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Restriction

Claims 12-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on July 22, 2005.

Claim Objections

Claim 22 is objected to because the first occurrence of "the" in line 2 should be --an--. Appropriate correction is required. For purposes of examining the instant invention, the examiner has assumed these corrections have been made.

Claim Rejections - 35 USC § 112

Claims 9, 21, and 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 9 and 21, the limitation "apart from the shaft member except the caulked portion" in claim 9, line 2, and in claim 21, lines 12-13, makes unclear what it tries to define. According to the drawings, the caulked portion is still apart from the shaft member since the caulked portion is part of the cylindrical member since the cylindrical member is a distinct component to that of the shaft. Therefore, how can the caulked portion not be apart as well? Further, if the caulked portion is not apart from the shaft member than from what is the caulked portion apart?

Regarding claim 22, the claim depends from claim 21 and therefore is indefinite.

Claim Rejections - 35 USC § 102

Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Chikaraishi, 6,301,975 (see marked-up attachment provided in the last Office action).

Regarding claim 21, Chikaraishi discloses, in Figures 3 and 5B, a structure comprising a shaft member **3** and a cylindrical member **10**. The shaft member **3** is formed out of a first material. The shaft member **3** has an outer periphery **A2** formed with at least one axial groove **11**. The axial groove **11** has a cross-section having opposed faces **A5** substantially parallel to each other. The cylindrical member **10** is provided to the outer periphery **A2** of the shaft member **3**. The cylindrical member **10** is formed out of a second material greater in linear expansion coefficient than the first material (col. 1, lines 48-53). A caulked portion **11** is provided to the cylindrical member **10** at a position corresponding to the axial groove **11** of the shaft member **3**. The caulked portion **11** has a deformed inner surface in press contact with the opposed faces **A5** of the circumferential groove **12** (see Fig. 5A). The cylindrical member **10** is loosely fitted to the shaft member **3** except the caulked portion **11**. The cylindrical member is apart from the shaft member except the caulked portion.

Claim Rejections - 35 USC § 103

Claims 1, 4-7, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., 3,688,521 (see marked-up attachment provided in the last Office action), in view of Chikaraishi, 6,301,975, and Jackman, 2,913,290.

Regarding claim 1, Smith et al. discloses, in Figure 1-4, a structure comprising a shaft member **26** and a cylindrical member **25**. The shaft member **26** is formed out of a first material. The shaft member **26** has an outer periphery **A2** formed with an axial groove **18** and a circumferential groove **21**. The axial groove **18** and the circumferential groove **21** have a cross-section having opposed faces **A5** substantially parallel to each other. The cylindrical member **25** is fitted to the outer periphery **A2** of the shaft member **26**. A caulked portion **18** is provided to the cylindrical member **25** at an intersection of the axial groove **18** and the circumferential groove **21** (col. 3, lines 19-24; Figure 4 shows an intersection). The caulked portion **18** has a deformed inner surface **A8** in press contact with the faces **A5** of the circumferential groove **21** and the caulked portion has a deformed inner surface in press contact with the opposed faces of the axial groove (col. 3, lines 19-24). However, Smith et al. do not disclose the cylindrical member **25** being formed out of a second material greater in linear expansion coefficient than the first material.

Applicants should note that it is inherent that the cylindrical member has a linear expansion coefficient different to that of the shaft member 26 to deform the material into the grooves. Further, Chikaraishi also teaches that it is common to have the second material be greater in linear expansion to be press fitted on the shaft member (col. 1, lines 48-52).

However, Smith et al. fail to disclose the axial groove **18** greater in depth than the circumferential groove **21**. Jackman teaches an axial groove 12 greater in depth than the circumferential groove 16 to connect a cylindrical member to a shaft member. Therefore, as taught by Jackman, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the axial groove of Smith et al. greater in depth than the circumferential groove to connect the cylindrical member to the shaft member of Smith et al.

Regarding claim 4, given the modification, Smith et al. fails to disclose a circumferential width of the caulked portion is greater than a circumferential width between the opposed faces of the axial groove at the intersection. Jackman teaches a circumferential width of the caulked portion is greater than a circumferential width between the opposed faces of the axial groove 12 to provide a caulked portion partially in the circumferential direction as opposed to complete making the caulked portion around the entire circumferential groove. Therefore, as taught by Jackman, it would have been obvious to one of ordinary skill in the art at the time the invention was made

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to make a circumferential width of the caulked portion be greater than a circumferential width between the opposed faces of the axial groove at the intersection to prevent from making the caulked portion around the entire circumferential groove.

Regarding claim 5, given the modification by Jackman, the caulked portion comprises a first caulked part corresponding to the circumferential groove **21** and a second caulked part corresponding to the axial groove **18**. The second caulked part would be arranged substantially in a middle of the first caulked part.

Regarding claim 6, the axial groove **18** comprises a plurality of groove portions in a circumferential direction.

Regarding claim 7, the groove portions are three in number.

Regarding claim 9, the cylindrical member **25** is apart from the shaft member **26** except the caulked portion **18**.

Regarding claim 11, the shaft member **3** comprises an input shaft arranged relatively rotatably with respect to an output shaft (not shown, however it is envisioned that an output shaft is placed in the shaft member 26 via feature 32).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., 3,688,521 (see marked-up attachment), in view of Chikaraishi, 6,301,975, and Jackman, 2,913,290, as applied to claims 1, 4-7, 9, and 11, above, and further in view of Fujioka et al., 4,716,756.

Regarding claim 8, Smith et al., as discussed, fails to disclose the axial groove **18** and the circumferential groove **21** being rectangular. Applicants are reminded that a change in the shape of a prior art device is a design consideration within the skill of the art. In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to design the groove of a rectangular cross section as taught by Fujioka et al., Fig. 8.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., 3,688,521 (see marked-up attachment), in view of Chikaraishi, 6,301,975, and Jackman, 2,913,290, as applied to claims 1, 4-7, 9, and 11, and further in view of Edgemon, Jr., 3,642,311.

Regarding claim 10, Smith et al., as modified, fail to disclose the axial groove **18** having an opening edge formed at an acute angle. Edgemon, Jr. teaches, in Figure 2, an axial groove **18** having an opening edge formed at an acute angle. Edgemon, Jr. does not state why the opening edge is formed at an acute angle. Applicant is reminded that side faces of a rectangular axial groove formed on a cylindrical surface

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inherently form an opening edge at an acute angle as part of a design consideration. Therefore, as taught by Edgemond, Jr., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the axial groove have an opening edge formed at an acute angle as part of forming an axial groove being rectangular on a cylindrical surface.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chikaraishi, 6,301,975, as applied to claim 21, and further in view of Smith et al., 3,688,521.

Regarding claim 22, Chikaraishi fails to disclose the axial groove having an opening edge formed at an acute angle at the intersection. Smith et al. teach, in Figures 2-4, an axial groove having an opening edge formed at an acute angle as part of design choice to make an axial groove for indentation. Applicant is reminded that changing the design of the groove to that of Smith et al. is an obvious matter of design choice as both designs accomplish a joint. Therefore, as taught by Smith et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the axial groove of Chikaraishi have an opening edge formed at an acute angle at the intersection as part of a design choice to make a joint.

Response to Arguments

Applicant's arguments filed 4/29/05 have been fully considered but they are not persuasive.

With respect to claim 1, applicant argues that Chikaraishi teaches the circumferential groove formed to be greater in depth than the axial groove. In response, this argument is irrelevant, as the examiner does not rely on this particular feature and this feature is irrespective as Chikaraishi is only used to teach that a second material greater in linear expansion coefficient than the first material. Applicant argues that the amendment requires the axial groove being greater in depth than the circumferential groove and the significance of such requirement. In response, it is noted that claim 1 has been amended and the examiner has noted the significance the feature has. However, Jackman teaches this specific feature and it would have been obvious to make the axial groove be greater in depth than the circumferential groove to make the connection. Applicant argues that Jackman fails to disclose the material of the cylindrical member having a greater in linear expansion coefficient than that of the shaft member. In response, applicant should note that Jackman is not used to teach what Chikaraishi teaches. Further, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800

F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Therefore, the combined teachings of Smith et al., Chikaraishi, and Jackman teach the claimed invention.

Applicant argues that even if the references were combined, the effect according to the present invention cannot be produced. In response, this argument is irrelevant, as the structure is being patented and not the effects of the invention. Accordingly, if the structure is present as claimed, inherently the effects are present.

With respect to claim 21, applicant argues, as amended, that the cylindrical member is apart from the shaft member except the caulked portion. In response, as much as Chikaraishi teaches a clearance between the cylindrical member and the shaft member, the cylindrical member is still apart from the shaft member except the caulked portion. Applicant should note that the broadest reasonable interpretation of the term “apart” has been give. For instance, isolating everything away from the caulked portion, everything that remains from the cylindrical member is apart from the shaft member including the bent portion.

Conclusion

The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Arena, 4,561,799, teaches a caulked portion at an intersection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-7083. The examiner can normally be reached from 9:30-5:30. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

E.G.

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March 6, 2006



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